

[Total No. of Printed Pages:2] **CODE NO:- Z-06**
FACULTY OF ENGINEERING
T.E(EEP/EE/EEE) Examination – MAY-2015
Special Purpose Electrical Machines
(Revised)

[Time: Three Hours]

[Max. Marks: 80]

“Please check whether you have got the right question paper.”

- N.B**
- i) Q.No.1 & Q.No.6 are compulsory.
 - ii) Attempt any two questions from remaining from each section.
(Total 4-from remaining, of two sections.)

SECTION -A

- Q.1 Attempt any five from the following. 10
- a) What happens to the frequency of generated voltage in an induction generator, when load is increased
 - b) Is the induction generator is a type of synchronous generator? Justify your answer in two Sentences.
 - c) State any four applications of linear induction motor.
 - d) What is the maximum rating of FHP motor?
 - e) What is basic configuration of BLDCM?
 - f) What is the deciding magnitude of sub synchronous & super synchronous speed?
 - g) Write any four applications of stepper motor.
 - h) What is electronic commutator?
- Q.2 A) Explain with neat diagram “Doubly fed induction machine”. 08
B) Explain equivalent circuit representation of self excited induction generator. 07
- Q.3 A) Explain any one harnessing method of wind power. 07
B) Write the specific applications of the isolation transformer & draw equivalent circuit of it. 08
- Q.4 A) With neat sketch, explain the constructional features of radial air gap synchronous reluctance motor. 08
B) Write the several advantages of BLDM, over small conventional DC motor. 07
- Q.5 A) Explain with neat sketch, multi stack configuration of hybrid stepper motor. 07
B) The secondary sheet of a linear I.M, having a pole pitch of 10cm, moves at a velocity of 8 mts/sec. if supply frequency is 50 Hz, find the slip. 08

SECTION B

- Q.6 Attempt any five from the following. 10
- a) Define Electric heating.
 - b) What is ARC Blow?
 - c) List out all the various welding equipments.
 - d) Enlist any four advantages of Electric heating.
 - e) Write any four applications of Di-electric heating.
 - f) Write any four applications of Resistance Oven.
 - g) Give the classifications of elect. Welding process.
 - h) State the first law of electrolysis.

- Q.7 A) Explain with neat sketch, how the spot welding process works, & also write the requirement of the process. 08
- B) Discuss with neat sketch, the working of Ajax vertical core type of induction furnace. 07
- Q.8 A) Explain the factors affecting electro deposition. 08
- B) Describe in detail, the application of electrolytic process used for metal extraction. 07
- Q.9 A) What is electro forming? Describe the preparation work for electro plating? 07
- B) A factory working for 100Hrs per week, refines copper electrolytically. There are 800 cells using a current of 6250 A. with 0.25 volts per cell. Given that, the copper has an electrochemical equivalent of 1.1844 kg per K Ampere hour. Determine the annual quantity of copper refined, & energy consumption per tonne. 08
- Q.10 A) Determine the diameter & length of nichrome wire, to be used as heating element, in a 10 kw, 220 v, 1-phase resistance furnace. The temperature of wire should not exceed 1000°C . The charge is to be at the temp of 500°C . Assume radiating efficiency 70% & emissivity as 0.9. 08
- B) With neat sketch, write the operating principle of a current transformer, its primary & secondary side limitations, its uses & applications. 07